



PATENT

42186A

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of	:	
	:	
Thomas E. RICCIARDELLI et al.	:	Patent Art Unit: 1732
	:	
Serial No.: 10/815,944	:	Examiner: S. Ahmed
	:	
Filed: April 2, 2004	:	
	:	
For: PRODUCT AND PROCESS FOR	:	
PRODUCING A MOLDED PRODUCT	:	
FROM RECYCLED CARPET WASTE	:	

PETITION UNDER 37 C.F.R. § 1.181
AND 37 C.F.R. § 1.53(e) TO ACCORD FILING DATE

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Pursuant to 37 C.F.R. §§ 1.181 and 1.53(e), Applicants hereby petition the Commissioner to accept the above-identified application and accord the application the original filing date. The petition fee of \$130.00 is enclosed.

The Notice to File Missing Parts dated September 24, 2004 states that pages 5, 16 and 19 of the specification were missing from the application as originally filed. This application is a divisional application of the parent application and as such was a true and accurate copy of the parent application. This application claims the benefit of the parent application under 35 U.S.C. § 120. Replacement pages 5, 16 and 19 are enclosed.

The undersigned carefully reviewed our file copy of the application as originally filed and found the application complete and included the pages indicated as being missing in the Notice to File Missing Parts. Since the undersigned's file copy is complete, which is a copy

10/05/2004 SDENB01 00000002 10815944
02 FC:1460 130.00 OP


of the originally filed application, it is respectfully submitted that to the best of the undersigned's knowledge, the pages indicated in the Notice to File Missing Parts were in fact actually filed. In addition, it is the common practice of the undersigned to review all papers and particularly patent applications for completeness prior to filing in the U.S. Patent and Trademark Office. Furthermore, it would appear highly unlikely that three random pages of the original application could be missing that are present in the file copy of the undersigned.

Appended hereto is a copy of the date-stamped postcard acknowledging receipt of the application by the U.S. Patent and Trademark Office. As noted on the postcard, the specification included 27 pages.

In view of the review of the file by the undersigned, it is believed that the complete application including pages 5, 16 and 19 was originally filed. Accordingly, it is respectfully requested that this application be accorded the original filing date of April 2, 2004.

The Commissioner is hereby authorized to charge any application fees or petition fees which may become or credit any overpayment in connection with this application to our Deposit Account No. 18-2220.

Respectfully submitted,



Garrett V. Davis
Reg. No. 32,023

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Dated: Oct 2, 2004

Today's Date 4-2-04

USSN/USP New

RAB&G FILE NO. 42186

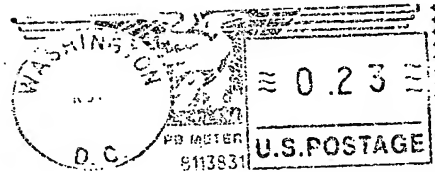
BY: GVD / gka

In Re Thomas E. Ricciardelli et al.

For PRODUCT AND PROCESS FOR PRODUCING A MOLDED PRODUCT FROM RECYCLED
CARPET WASTE

The following was received in the U.S. Patent & Trademark Office on the date stamped hereon:

- ☒ Check for \$ 385.00
- ☒ Specification 27 pgs. 13 claims
- ☒ Combined Decl., Petition & Power
- ☐ Assignment
- ☒ Drawings 2 Sheets ☒ Formal ☐ Informal
- ☐ Small Entity Statement
- ☐ Claim for Priority & ☐ Document
- ☐ Information Disclosure Statement
- ☐ Trademark Application & _____ Specimens
- ☐ Rule 53(b) Appln. ☐ Rule 53(d) Appln. (CPA)
- ☐ Amendment ☐ Response
- ☐ Notice of Appeal
- ☐ Brief ☐ Req. Oral Hearing
- ☐ Issue Fee Transmittal
- ☐ Trademark Renewal Application
- ☐ Decl. of Use ☐ 8 ☐ 15
- ☐ Petition to Extend _____ mos./days
- ☐ Completion of Application
- ☐ _____
- ☐ _____
- ☐ Due Date Not Related To Response



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Doc'd ☒ File _____

Rec'd

2004

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BY KLP

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Another object of the invention is to provide an economical process for recycling vinyl-backed carpet scrap into a durable product.

5 A further object of the invention is to provide a process for utilizing carpet scrap substantially without reducing the length of the carpet fibers.

Still another object of the invention is to provide a process of producing a molded matrix of polyvinyl chloride having recycled carpet fibers substantially
10 uniformly dispersed therein.

These and other objects of the invention are attained by providing a product having a fiber-reinforced, flexible matrix, wherein said matrix comprises about 10% to about 75% by weight of waste scrap
15 carpeting, said carpeting having a polyvinyl chloride backing and carpet fibers from a polymer having a melting point higher than the melting point of polyvinyl chloride, and about 25% to about 90% by weight of flexible polyvinyl chloride. The product can also
20 contain up to about 5% by weight of a polyvinyl chloride plasticizer, and up to about 5% of a polyethylene copolymer. The matrix is a substantially continuous phase of polyvinyl chloride and carpet fibers dispersed therein.

25 The objects and advantages of the invention are further attained by providing a process for forming a molded article comprising the steps of supplying a feed mixture to the inlet of an extruder, said feed mixture comprising carpet scrap having a fiber component and a

During the processing operation, the polyvinyl chloride/fiber mixture is fed from extruder 28 through valve 38 into extruder 36. When a desired amount of material is supplied to extruder 36, valve 38 is closed.

5 Cylinder 40 preferably includes a heating jacket to maintain the temperature of the material being extruded and prevent solidification. In preferred embodiments, valve 38 is able to cut any carpet fibers in the valve to prevent clogging or jamming of the valve.

10 The reciprocating plunger 42 is then actuated to extrude the material through an outlet 48. A hydraulically controlled valve 50 is provided in a conduit 52 coupled to outlet 48 for controlling the flow of material from extruder 36. Typically reciprocating
15 plunger 42 forces the material from the cylinder at a pressure of about 50 to about 300 bar.

 In the embodiment illustrated, conduit 52 is coupled to a mold 54 having complementing halves 56, 58. The material is injected into the mold 54 at pressures of 50
20 to 300 bar to form a molded product. Mold 54 is preferably a standard injection mold assembly having a cooling jacket (not shown) for circulating water or other coolant. The mold halves 56, 58 are clamped together during the molding process by hydraulic cylinders which
25 apply a clamping force of about 50 to 800 metric tons. After a predetermined time necessary to solidify the material, the mold is opened to remove the molded product.

otherwise process the waste carpet before use. The post-consumer carpet can be used with the dirt and other foreign materials normally present in waste carpeting. In one embodiment of the invention, the molded product
5 contains about 45% polyvinyl chloride, 15% fiber and about 40% inert materials, where the percentages are based on the weight of the molded product.

In one embodiment of the invention, the molded product is formed from about 50% vinyl-backed carpet
10 squares having about 25% by weight nylon fiber and 70% backing. The backing material contains about 30% by weight polyvinyl chloride, 15% by weight nylon fiber and 55% filler. The resulting molded product has a Shore hardness of about 90-95, a tensile strength of about
15 3200-4300 psi, modulus of elasticity of about 100,000 to 130,000 psi, a tear strength of about 100-150 lb/in and an abrasion resistance of about 0.4 g loss by the Taber method, 500 g Wheel, 1000 cycles.

A plasticizer can be added to the feed mixture to
20 increase the flexibility and reduce the hardness of the polyvinyl chloride matrix to compensate for the increased stiffness caused by a high fiber content. The plasticizer is preferably added to the mixer with the shredded carpet and polyvinyl chloride to form part of
25 the feed mixture to the extruder. The plasticizer is usually included in amounts up to about 5% by weight based on the total weight of the molded product. The non-melting components of the carpeting including dirt, latexes, fibers, inorganic fillers and other impurities